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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,531	07/15/2003	Doni S. Dattani	03-0444 1496.00308	7492
22501 7590 12/24/2008 CHRISTOPHER P MAIORANA, PC LSI Corporation 24840 HARPER SUITE 100 ST CLAIR SHORES, MI 48080				
EXAMINER HUBER, JEREMIAH C				
ART UNIT 2621		PAPER NUMBER		
MAIL DATE 12/24/2008		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/619,531

Applicant(s)

DATTANI ET AL.

Examiner

JEREMIAH C. HUBER

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 12, 13, 15-18 and 20-24 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-9, 12, 13, 15-18 and 20-24 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/15/2008 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-9, 12, 13, 15-18 and 20-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims as amended recite formulas organized as a plurality of groups, the claims further recite four different formula groups.. The applicant points to page 32 lines 1-10 in support of the claim amendments. The cited portion includes a table listing prediction formulas under the headings Pred0-Pred3 and indicates that predictors are

determined for subblocks A-D based upon available sums S0-S3. However, neither the cited portion of the specification nor the rest of the specification discloses any grouping of formulas. The examiner believes that the applicant may wish groups of formulas to refer to the columns Pred0-Pred3, however as will be explained below this interpretation is problematic. If the applicant wishes this interpretation the claims should be amended to indicate that the groups correspond Pred columns as defined in table 1, and further indicate which group corresponds to each column. The claims will hereafter be interpreted as best understood by the examiner.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17, 18, 21 and 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite first through fourth formula groups. As stated above, the specification does not define formula groups. The examiner believes that the first subset may rationally be Pred0 as Pred0, like the first group, is used when all sum values are available. See claim 1. Similarly, the examiner believes that group 4 may rational be Pred3 as it is a median value and used when no sum values are available. See claims 17 and 18. However, both Pred1 and Pred2 are to be used when a single predictor for a given block is unavailable. For example, Pred1 is used to Predict block A when only S2 is unavailable, but Pred2 is used to predict block A when only S0 is unavailable. Therefore, the examiner does not believe that the

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second and third groups are defined in such a way as to appraise one of ordinary skill in the art of the meets and bounds of the claim. The claims will hereafter be as having only first, second and fourth groups, where the second group relates to both Pred1 and Pred0. Claims 21, 23, 17 and 18 relating to the third group will not be further examined.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-2 and 5-9, 12, 13, 15, 16, 20, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun (20030202705) in view of "Working Draft Number 2 Revision 2" (hereafter WD2).

In regard to claim 1 Sun discloses an apparatus including:

a first processing circuit configured to generate a plurality of reconstructed samples in response to a plurality of macroblocks of an input signal (Sun Fig. 1 note dequantization (Q-1), inverse transform (T-1), adder (+) and frame buffer and par. 12 note reconstruction path).

a second processing circuit configured to determine an intra prediction predictor for a current macroblock in response to available reconstructed samples adjacent to the current macroblock (Sun Fig 1 note Intra MB section par. 12 intra mode).

It is noted that Sun does not disclose details related to chroma sub-blocks. However WD2 discloses a method of providing a intra prediction DC predictor for each 4x4 chroma sub-block wherein each of the intra DC predictors calculated according to a first formula group are generated in response to four adjacent samples when all four adjacent samples are present (WD2 sections 4.4.2-4.4.5 pages 28 to 33 particularly page 33 section 4.4.4.1.3 note when all samples S0-S3 are present all blocks A-D are predicted with a prediction type that uses closest possible samples, e.g. D is predicted using S1 and S3 because both are equally close).. It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of including chroma sub-block intra prediction as disclosed by WD2 in the apparatus of Sun in order to improve coding efficiency.

It is noted that Sun does not disclose a case where only a single one of the sum values is not present. It is further noted that the claims recites prediction when all sum values are available, and when only a single sum value is unavailable. However, it does not seem from the claims that it is possible when processing a chroma block for there to be both all four sums available and be missing a single sum. Therefore, the examiner believes the claims can be properly met by showing only one of the two of the two conditions.

In regard to claim 2 refer to the statements made in the rejection of claim 1 above. Sun further discloses that the second processing circuit is implement in the decoding loop of an encoder (Sun Fig. 1 and par. 12 note intra MB section is part of the reconstruction, or decoding loop.).

In regard to claim 5 refer to the statements made in the rejection of claim 1 above. WD2 further discloses that intra predicted sub-blocks are generated in response to predictors (WD2 page 33 section 4.4.4.1.3 note S0-S3)

In regard to claim 6 refer to the statements made in the rejection of claim 5 above. WD2 further discloses that the predictors are generated in response to reconstructed samples (WD2 page 33 section 4.4.4.1.3 note S0-S3 are the sums of 4 neighboring pixels).

In regard to claims 7-9 refer to the statements made in the rejection of claim 6 above. WD2 further discloses that reconstructed samples are formed from both a row adjacent to the top edge and a column adjacent to the left edge of the chroma block (WD2 page 33 section 4.4.4.1.3 note figure 8).

In regard to claims 12-13 refer to the statements made in the rejection of claims 1 and 6-11 above. WD2 further discloses that there is only one mode for chroma prediction, which following the WD2 naming convention would be the 0th mode (WD2 page 33 section 4.4.4.1.3 note first sum of neighboring pixels is labeled S0 rather than S1).

In regard to claim 15 refer to the statements made in the rejection of claim 13 above. WD2 further discloses that predictors are selected independently for each sub-block (WD2 page 33 section 4.4.4.1.3 note when all predictors are present sub-blocks A, B, C, and D each receive different values).

In regard to claim 16 refer to the statements made in the rejection of claim 13 above. Sun further discloses inverse quantization and inverse transformation (Sun Fig.

1 note dequantization (Q-1), inverse transform (T-1), adder (+) and frame buffer and par.

In regard to claim 17 refer to the statements made

In regard to claim 20 refer to the statements made in the rejection of claim 13 above. WD2 further discloses that the best predictor is a weighted average of one or more corresponding sums (WD2 page 33 section 4.4.4.1.3 note best predictor occurs when S0-S3 are present, also note A is the weighted average of S0 and S2 with each weight of 1).

In regard to claims 22 and 24 refer to the statements made in the rejection of claims 1 and 13 above. Sun further discloses generating mode information identifying the use of intra prediction for chroma blocks (Sun Figs. 2-3 and pars. 43 and 46 note prediction information indicates intra mode). WD2 further discloses that the formulas for inter chroma block prediction are inherently identified when an intra prediction mode is set, because only one mode exists (WD2 4.4.4.1.3).

2. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of WD2 as applied to claim 1 above, and further in view of Joch et al (20040101059).

Sun further discloses that the encoder conforms to the H.264 standard (Sun Fig. 1 and par. 12). It is noted that neither Sun nor WD2 explicitly disclose details of a decoder. However decoding is substantially the inverse operation of encoding, and at the time of the invention it would have been obvious to one of ordinary skill in the art to

arrange the components disclosed by Sun and WD2 in order to implement an H.264 compliant decoder to decode an H.264 compliant bitstream encoded by the encoder of Sun in view of WD2 as is shown by Joch (Joch Fig. 4 and pars. 62-73).

Response to Arguments

Applicant's arguments filed 10/15/2008 have been fully considered but they are not persuasive.

In regard to the applicants arguments regarding the previous rejections of the claims under 35 U.S.C. 112 second paragraph. The applicant generally asserts that for any set of four elements more than four subsets may be created. The examiner notes this, however the issue regarding grouping is not whether one of ordinary skill in the art would recognize how to arbitrarily divide a set into any number of subsets. Rather, the reason for indicating that claims 21 and 23 are indefinite is that one of ordinary skill in the art would not recognize the subject matter to which each subset is to pertain. As in the case of claims 21 and 23, without guidance as to what comprises the fourth and fifth subsets, even knowing that such subsets could exist, does not inform one of ordinary skill in the art as to the meets and bounds of the subsets within the claim limitation.

The applicant asserts that Sun in view of WD2 and Joch does not disclose determining predictors when only a single one of the sum values is unavailable. This limitation was suggested by the examiner in the last Office Action. The examiner appreciates the applicants inclusion of the suggested limitation. However, after a close

reading of the specification and the claims, and upon consultation with a supervisor, the examiner believes that claim 1 functionally requires an alternative interpretation despite the 'and' used in connecting its elements. Therefore, a new rationale for the rejection has been provided in regard to claims 1, 12 and 13. The examiner would suggest amending the claims to indicate that the first prediction method operates on a block wherein all sum values are present, and the second prediction method operates on a subsequent block wherein only a single one of said sum values is unavailable.

The applicant further asserts that Sun in view of WD2 and Joch does not disclose a signal carrying mode information that identifies the formulas used to generate the intra prediction DC predictors. The applicant points out that WD2 discloses only a single mode, and that no further mode information is necessary. The examiner must disagree. As now stated in the rejection of claims 22 and 24, the mode information provided by Sun is the information that the intra mode is to be used for chroma blocks. As pointed out by the applicant no further mode information is necessary to identify the formulas used to generate the intra prediction DC predictors. Therefore the examiner believes the rejection of claims 22 and 24 is proper.

The applicant does not provide any additional arguments regarding claims 2-9, 11, 15018, and 20-24.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JEREMIAH C. HUBER whose telephone number is

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(571)272-5248. The examiner can normally be reached on Mon-Fri 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremiah C Huber
Examiner
Art Unit 2621

/Jeremiah C Huber/
Examiner, Art Unit 2621

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